

REMARKS

Claims 1-28 are pending. Claims 9 and 23 were amended to remedy a typographic error by inserting the less-than-equal character --  $\leq$  -- in the formula of each claim, between “0.1s” and “ $\lambda$ ”. Claim 15 was amended for typographical errors and clarity without narrowing to point to the contents of the survey. Attached herein is an excerpt from the “oilfield glossary” published by Schlumberger, a multinational oilfield service company.

Claims 1-13 were rejected under the judicially created doctrine of obviousness-type double patenting in light of U.S. Patent No. 6,696,839. This type of rejection may be overcome by filing a terminal disclaimer, which is enclosed.

Claims 14-28 were rejected under 35 U.S.C. §112 ¶1, for lack of written description. Specifically, the terms “natural gas” (claims 14 and 28) and “preparing a map that comprises a depiction of at least a portion of the boundary of the hydrocarbon-containing reservoir as derived from the process of locating the boundary of the hydrocarbon-containing reservoir” (claim 15) were argued as lacking written description. Although the Applicant does not have to describe exactly the subject matter claimed, the description must clearly allow persons of ordinary skill in the art to recognize that the Applicant invented what is claimed. Vas-Cath, Inc. v. Muhurkar, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991).

A person of ordinary skill in these arts, after reading the Application, would recognize that the Applicants have invented the method of claim 15 as applied to natural gas. In the first place, the term “hydrocarbon” in parent claim 15 is recognized as including oil and gas, since these are the commercially desirable contents of a hydrocarbon-containing reservoir. As stated in the specification, e.g., at page 2, lines 16-22, the techniques of the invention exploit the difference between the resistivity of water and the resistivity of a hydrocarbon-bearing formation, which will be 20 to 300 times greater than that of a water-bearing formation. Since gas and oil both have a higher resistivity than water, it is clear that the term hydrocarbon embraces oil and/or natural gas. Further, the definition of “hydrocarbon” provided in the Oilfield Glossary states that hydrocarbons can occur as a gas and that natural gas is a common hydrocarbon. Since an ordinary artisan would understand that the Applicants invented the

claimed methods as applied to “natural gas”, there is adequate written description to support this claim. As stated above, there is no need for the words “natural gas” to appear in the specification. Therefore removal of the written description rejection to claim 28 is requested.

Claim 15 was rejected for lack of written description for “preparing a map that comprises a depiction of at least a portion of the boundary of the hydrocarbon-containing reservoir as derived from the process of locating the boundary of the hydrocarbon-containing reservoir”. While Applicants maintain that there is sufficient written description to support a map, which is a manifestation of the results of the survey, Applicants amended claim 15 for clarity. As amended, this portion of claim 15 now states “wherein the results of the survey comprise at least a portion of the boundary of the hydrocarbon-containing reservoir”.

Referring to claim 15, the element of “the survey” has antecedent basis in the preamble of claim 15. Support for this amendment is provided in the specification. For example, at the paragraph bridging page 1, the specification states that the Applicants contemplated using an electromagnetic surveying method to exploit the differing electromagnetic resistivities between hydrocarbon filled strata and water-filled strata.<sup>1</sup> Using a survey method clearly points to the results of the survey prepared by the method, and, indeed, the survey method is claimed in detail at portions (a) through (f) of the claim. And the specification states that it provides “a method for locating the boundary of a hydrocarbon-containing reservoir”, which clearly points to the results of the survey as including the boundary of the hydrocarbon-containing reservoir.<sup>2</sup>

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<sup>1</sup> “It has been appreciated by the present applicants that while the seismic properties of hydrocarbon filled strata and water-filled strata do not differ significantly, their electromagnetic resistivities do differ. Thus, by using an electromagnetic surveying method, these differences can be exploited.” Specification, paragraph bridging page 1.

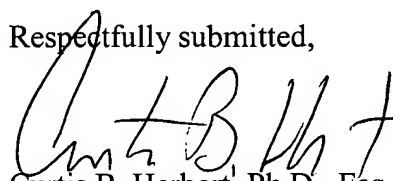
<sup>2</sup> “According to one aspect of the present invention, there is provided, a method for locating the boundary of a hydrocarbon-containing reservoir in subterranean strata, which comprises: deploying an electromagnetic transmitter; deploying an electromagnetic receiver; applying an electromagnetic (EM) field to the strata using the transmitter; detecting the EM wave field response using the receiver; analysing the response to determine the presence or absence of a hydrocarbon-containing reservoir; moving the receiver to another location; and repeating the procedure; in which method, the path taken by the receiver in moving from location to location is determined by the signal characteristics of previously detected EM wave field responses.” Specification, page 5, lines 7-14.

Therefore a person of ordinary skill in the arts would recognize the presently claimed invention as having been invented by the Applicants evidenced by the specification.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Curtis B. Herbert". The signature is fluid and cursive, with the first name "Curtis" and last name "Herbert" clearly distinguishable.

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## hydrocarbon

### 1. n. [Geology]

ID: 273

A naturally occurring organic compound comprising hydrogen and carbon. Hydrocarbons can be as simple as methane [CH<sub>4</sub>], but many are highly complex molecules, and can occur as gases, liquids or solids. The molecules can have the shape of chains, branching chains, rings or other structures. Petroleum is a complex mixture of hydrocarbons. The most common hydrocarbons are natural gas, oil and coal.

See: asphalt, bitumen, coal, crude oil, dry gas, field, field gas, generation, geochemistry, hydrocarbon kitchen, kerogen, maturity, methane, natural gas, oil field, oil field, oil-prone, overmature, pay, petroleum, play, play, post-mature, preservation, prospect, reservoir, retrograde condensation, secondary migration, sedimentary basin, source rock, stratigraphic trap, tar sand, wet gas

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